WHAT IS CLAIMED IS:

1. A method of carrying out the size separation in a sample having at least one target analyte which comprises:

(a) providing the sample solution having target analyte(s),

(b) providing a sieving medium in a receptacle for such medium comprising a non-ionic monomeric surfactant of the general formula, B-A, wherein A is a hydrophilic moiety and B is a hydrophobic moiety, present in a solvent at a concentration forming a self-assembled micelle configuration under selected conditions and having an aggregation number providing an equivalent weight capable of effecting the size separation of the sample solution so as to resolve the target analyte(s), and

(c) carrying out the size separation.

2. The method of claim 1 wherein the non-ionic monomeric surfactant is an n-alkyl polyoxyethylene ether.

3. The method of claim 1 wherein the aggregation number is at least 100.

4. The method of claim 3 wherein the aggregation number is at least about 1,000.

5. The method of claim 3 wherein the aggregation number is at least about 10,000.

6. The method of claim 1 wherein the temperature of the solvent containing the non-ionic monomeric surfactant and the sample solution is increased or decreased in order to adjust the aggregation number prior to carrying out the size separation.

7. The method of claim 1 wherein the concentration of the non-ionic monomeric surfactant is adjusted to provide the micelle configuration capable of effecting size separation.

8. The method of claim 1 wherein a denaturant is added to the solvent containing a non-ionic monomeric surfactant in order to adjust the aggregation number.

9. The method of claim 2 wherein the n-alkyl polyoxyethylene ether is a member selected from the group consisting of $C_{14}E_6$, $C_{16}E_6$, and $C_{16}E_8$.

10. The method of claim 1 wherein the sieving medium receptacle is at least one capillary tube and the separation is carried out using capillary electrophoresis.

11. The method of claim 10 wherein there are a plurality of capillary tubes.

12. The method of claim 1 wherein the solvent is water.

13. A system for the size separation and detection of target analyte(s) in a sample having at least one target analyte, comprising:

(a) a receptacle for the separation of said target analyte(s) in said sample having an inlet and an outlet and comprising a sieving medium comprising a non-ionic monomeric surfactant of the general formula, B-A, wherein A is a hydrophilic moiety and B is a hydrophobic moiety, present in a solvent at a concentration forming a self-assembled micelle configuration under selected conditions and having an aggregation number providing

an equivalent weight capable of effecting the size separation of the constituents of the sample solution so as to resolve the target analyte(s);

(b) a sample introduction means for introducing the sample solution into the receptacle and causing size separation as the target analyte(s) moves through the receptacle outlet ; and

(c) a means for detecting the target analyte(s).

14. The system of claim 13 wherein said non-ionic monomeric surfactant is an n-alkyl polyoxyethylene ether.

15. The system of claim 13, wherein said means for detection of said target analyte(s) is by laser-induced fluorescence.

16. The system of claim 13, wherein said means for detection of said target analyte(s) is by UV absorption detection.

17. The system of claim 14, wherein said n-alkyl polyoxyethylene ether is a member selected from the group consisting of $C_{14}E_6$, $C_{16}E_6$, and $C_{16}E_8$.

18. The system of claim 13, wherein said receptacle is a capillary tube.

19. The system of claim 13, wherein the system comprises a plurality of receptacles.

20. The system of claim 19, wherein said receptacles are capillaries and the separation is carried out by multiplexed capillary electrophoresis.

21. A method of detecting at least one target analyte in a sample which comprises:

(a) providing the sample solution having the target analyte(s),

(b) providing at least one receptacle, said receptacle(s) having an inlet and an outlet;

(c) providing a sieving medium comprising a non-ionic monomeric surfactant of the general formula, B-A, wherein A is a hydrophilic moiety and B is a hydrophobic moiety, present in a solvent and forming a self-assembled micelle configuration under selected conditions and having an aggregation number (n) providing an equivalent weight capable of effecting the size separation so as to resolve the target analyte(s), the sieving medium not forming a micelle capable of effecting the size separation in a first temperature range, but forming a micelle capable of effecting the size separation at a second temperature range;

(d) introducing said sieving medium into the receptacle at a temperature within the first temperature range;

(e) adjusting the temperature of said sieving medium within said receptacle(s) to a temperature within said second temperature range;

(f) introducing said sample solution into the inlet of said receptacle;

(g) causing the size separation to be effected; and

(h) detecting the target analyte(s).

22. The method of claim 21 wherein the non-ionic monomeric surfactant is a n-alkyl polyoxyethylene ether.

23. The method of claim 21, wherein said receptacle is a capillary.

24. The method of claim 21, wherein a plurality of receptacles are provided for carrying out said separation.

25. The method of claim 24, wherein said receptacles are capillary tubes.

26. A electrophoresis system for the separation and detection of analyte(s) in a sample solution containing at least one analyte, comprising:

(1) at least one receptacle for the separation of said analyte(s), said receptacle having an inlet and an outlet,

(2) a sieving medium within said receptacle comprising a non-ionic monomeric surfactant of the general formula, B-A, wherein A is a hydrophilic moiety and B is a hydrophobic moiety, present in a solvent and forming a self-assembled micelle configuration under selected conditions and having an aggregation number providing an equivalent weight capable of effecting the size separation so as to resolve the target analyte(s) of said sample solution, the sieving medium not forming a micelle capable of effecting the size separation in a first temperature range, but forming a micelle capable of effecting the size separation at a second temperature range;

(3) a means for introducing said sieving medium into the receptacle at a temperature within the first temperature range;

(4) a means for adjusting the temperature of said sieving medium within said receptacle to a temperature within said second temperature range;

(5) a means for introducing said sample solution containing said analyte(s) into said receptacle containing said sieving medium for separation; and

(6) a means for detecting said analyte(s).

27. The electrophoresis system of claim 26 wherein the non-ionic monomeric surfactant is an n-alkyl polyoxyethylene ether.

28. The electrophoresis system of claim 26, wherein the receptacle is a capillary tube.

29. The electrophoresis system of claim 26, wherein the system comprises a plurality of receptacles for carrying out said separation.

30. The electrophoresis system of claim 29, wherein said receptacles are capillary tubes.

31. The electrophoresis system of claim 26, wherein the means for detecting said analyte(s) is by laser-induced fluorescence.

32. The electrophoresis system of claim 26, wherein the means for detecting said analyte(s) is by UV/absorption detection.